

CLAIMS

What is claimed is:

1. An optical guide which guides light incident therethrough in a lengthwise direction, makes uniform the light in an effective width range of the lengthwise direction and outputs the uniform light, the optical guide comprising:

 a first surface to receive the incident light, comprising a plurality of reflective slopes to reflect and make uniform the incident light, each of the reflective slopes having a stripe shape and forming a varying angle with respect to the lengthwise direction; and

 a second surface, which is opposite to the first surface and is an output surface from which the light reflected from the reflective slopes is output.

2. The optical guide of claim 1, wherein the plurality of reflective slopes are formed so that an interval between the reflective slopes is varied.

3. The optical guide of claim 2, wherein the interval between the reflective slopes gradually becomes smaller when moving further from a side of the guide onto which the light is incident.

4. The optical guide of claim 1, wherein the angle formed by the reflective slopes with respect to the lengthwise direction gradually becomes larger when moving further from a side of the guide onto which the light is incident.

5. The optical guide of claim 1, wherein the reflective slopes have a width that gradually becomes greater when moving closer to a side of the guide onto which the light is incident and gradually becomes smaller when moving further from the side onto which the light is incident.

6. The optical guide of claim 1, further comprising a groove having a triangular structure and a stripe shape, the groove forming the reflected slopes.

7. An optical guide which guides light incident therethrough in a lengthwise direction, makes uniform the light in an effective width range of the lengthwise direction and outputs the uniform light, the optical guide comprising:

a first surface to receive the incident light, comprising a plurality of reflective slopes to reflect and make uniform the incident light, each of the reflective slopes having a stripe shape and forming a varying angle with respect to the lengthwise direction, an interval between the reflective slopes being varied; and

a second surface, which is opposite to the first surface and is an output surface from which the light reflected from the reflective slopes is output.

8. The optical guide of claim 7, wherein the plurality of reflective slopes are parallel to one another.

9. The optical guide of claim 7, wherein the plurality of reflective slopes have a uniform width.

10. The optical guide of claim 9, further comprising:
a groove on the first surface having a triangular structure and a stripe shape and,
the groove forming the reflective slopes; and
a slope which connects the reflective slopes to a portion of the first surface along the lengthwise direction and having a width greater than a width of the reflective slopes, which forms an incline with respect to the lengthwise direction.

11. The optical guide of claim 7, further comprising a groove on the first surface having a triangular structure and a stripe shape.

12. An image forming apparatus comprising an eraser which initializes a surface potential of a photoreceptor medium, and an auxiliary transfer device, which facilitates transfer of a toner image by radiating light on a surface of the photoreceptor medium, wherein the eraser and the auxiliary transfer device comprise:

a light source to emit light; and

an optical guide on a side of the apparatus having the light source, which guides the light emitted from the light source and incident therethrough in a lengthwise direction, makes uniform the light in an effective width range of the lengthwise direction and outputs the uniform light,

wherein the optical guide comprises:

a first surface to receive the incident light, comprising a plurality of reflective slopes to reflect and make uniform the incident light, each having a stripe shape and forming a varying angle with respect to the lengthwise direction, and

a second surface which is opposite to the first surface and is an output surface from which the light reflected from the reflective slopes is output.

13. The apparatus of claim 12, wherein the plurality of reflective slopes are formed so that an interval therebetween is varied.

14. The apparatus of claim 13, wherein the interval between the reflective slopes gradually becomes smaller when moving further from a side onto which the light is incident.

15. The apparatus of claim 12, wherein the angle formed by the reflective slopes with respect to the lengthwise direction gradually becomes larger when moving further from a side onto which the light is incident.

16. The apparatus of claim 12, wherein the reflective slopes are formed to have a

width that gradually becomes greater when moving closer to a side onto which the light is incident and gradually becomes smaller when moving further from the side onto which the light is incident.

17. The apparatus of claim 12, further comprising a groove having a triangular structure and a stripe shape.

18. An image forming apparatus comprising an eraser which initializes a surface potential of a photoreceptor medium, and an auxiliary transfer device, which facilitates transfer of a toner image by radiating light on a surface of the photoreceptor medium, wherein the eraser and the auxiliary transfer device each comprises:

a light source to emit light; and
an optical guide on a side of the apparatus having the light source, which guides the light emitted from the light source and incident therethrough in a lengthwise direction, makes uniform the light in an effective width range of the lengthwise direction and outputs the uniform light,

wherein the optical guide comprises:
a first surface to receive the incident light, comprising a plurality of reflective slopes to reflect and make uniform the incident light, each having a stripe shape and forming a varying angle with respect to the lengthwise direction, and
a second surface which is opposite to the first surface and is an output surface from which the light reflected from the reflective slopes is output.

19. The apparatus of claim 18, wherein the plurality of reflective slopes are parallel to one another.

20. The apparatus of claim 18, wherein the plurality of reflective slopes have a uniform width.

21. The apparatus of claim 20, further comprising:
a groove on the first surface having a triangular structure and a stripe shape ; and
a slope which connects the reflective slopes to a portion of the first surface along the lengthwise direction and having a width greater than a width of the reflective slopes, which forms an incline with respect to the lengthwise direction.
22. The apparatus of claim 18, further comprising a groove on the first surface having a triangular structure and a stripe shape.
23. An optical guide comprising:
a first surface to receive incident light and make uniform the incident light; and
a second surface, opposite the first surface, to output the uniform light from the first surface.
24. The optical guide of claim 23, wherein the first surface comprises a plurality of reflective slopes, each of the reflective slopes having a stripe shape and forming a varying angle with respect to a lengthwise direction of the optical guide.
25. The optical guide of claim 23, further comprising a side between the first and second surfaces, the side comprising a groove to receive a source of the incident light.
26. The optical guide of claim 25, further comprising a cover to cover the light source.
27. The optical guide of claim 23, wherein the first surface comprises a plurality of reflective slopes to reflect and make uniform the incident light.

28. The optical guide of claim 27, wherein the reflective slopes are formed by a plurality of grooves having a triangular cross section.

29. The optical guide of claim 28, wherein a reflectivity of the optical guide decreases with decreasing distance from a source of the incident light.

30. The optical guide of claim 29, wherein the reflective slopes are slanted and at an interval so that portions thereof overlap when projected on an axis in a lengthwise direction of the optical guide.

31. The optical guide of claim 28, wherein a depth of the grooves increases with decreasing distance from a source of the incident light.

32. The optical guide of claim 27, wherein the reflective slopes have a uniform width.

33. The optical guide of claim 27, wherein the reflective slopes have a width that increases with decreasing distance from a source of the incident light.

34. An image forming apparatus, comprising:
a photoreceptor; and
an eraser to initialize a surface potential of the photoreceptor, the eraser comprising
an optical guide comprising:
a first surface to receive incident light, comprising a plurality of reflective slopes to reflect and make uniform the incident light, and
a second surface, opposite the first surface, to output the light reflected from the reflective slopes.

35. The apparatus of claim 34, further comprising a single LED to emit the incident light.
36. The apparatus of claim 35, wherein the LED is between the first and second surfaces.
37. An image forming apparatus, comprising:
 - a photoreceptor; and
 - a transfer device to radiate light on a surface of the photoreceptor, the transfer device comprising an optical guide comprising:
 - a first surface to receive incident light, comprising a plurality of reflective slopes to reflect and make uniform the incident light, and
 - a second surface, opposite the first surface, to output the light reflected from the reflective slopes.
38. The apparatus of claim 37, further comprising a single LED to emit the incident light.
39. The apparatus of claim 38, wherein the LED is between the first and second surfaces.